AMENDMENTS TO THE DRAWINGS

Corrected drawing sheets in compliance with 37 C.F.R. § 1.121(d) are enclosed herewith.

LAW OFFICES OF
CHRISTENSEN O'CONNOR JOHNSON KINDNESS PLLC
1420 Fifth Avenue
Suite 2800
Seattle, Washington 98101
206.682.8100

REMARKS

A Request for Continued Examination (RCE) is being submitted contemporaneously herewith. Applicant requests reconsideration of the above-identified application in light of the remarks set forth herein. Claims 1-16 were pending in this application. Claims 1, 5, 9-12, 15, and 16 have been amended; and new Claims 17-28 have been added. Therefore, Claims 1-28 are now pending in this application.

Claims 1-16 have been rejected and Claims 1, 5, and 9-11 have been objected to. In addition, objections to the specification and the drawings have been entered.

Applicant submits that all claims are now in condition for allowance. Accordingly, applicant requests reconsideration and allowance of all claims.

Statement of the Substance of Examiner Interview

An Examiner Interview was held by telephone on January 6, 2009, between Examiners Clinton Ostrup and Justine Yu; applicant's representative Emily Peyser; and applicant, William Gordon. During the interview, proposed amendments to Claim 1, U.S. Patent No. 3,556,098, issued to Kanwisher, and general background information on rebreather canisters were discussed. The Examiners requested a formal amendment for further consideration.

Although no agreement was reached with respect to the status of the claims, applicant thanks the Examiners for their time spent during the interview.

Objection to the Specification

The specification has been objected to because of the following informalities. First, the specification does not provide a description for reference numbers 77, 86, 87, 99, 100, 101, 102, 111, 112, 113, 115, 116, and 117 in the drawings. Second, on page 7, lines 3-9, reference number 81 has been used to describe both a "compressed gas conduit" and a "diluent container." Appropriate corrections have been made.

LAW OFFICES OF
CHRISTENSEN O'CONNOR JOHNSON KINDNESS PLLC
1420 Fifth Avenue
Suite 2800
Seattle, Washington 98101
206.682.8100

Objection to the Drawings

The drawings have been objected to because it is unclear what the reference numbers 77, 86, 87, 99, 100, 101, 102, 111, 112, 113, 115, 116, and 117 are referring to as they have not been defined in the specification. In addition, reference number 81 has been used to describe two elements. Corrected drawing sheets in compliance with 37 C.F.R. § 1.121(d) are enclosed herewith.

Claim Objections

Claims 1, 5, and 9-11 have been objected to because of informalities. Appropriate corrections have been entered.

Claim Rejections Under 35 U.S.C. § 101

Claims 1-16 stand rejected under 35 U.S.C. § 101 because the claimed invention is directed to non-statutory subject matter. Specifically, the Office Action states that the claim positively recites part of the human body. Appropriate corrections have been entered.

Claim Rejections Under 35 U.S.C. § 112

Claims 1-16 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter that applicant regards as the invention. Specifically, Claims 1, 5, and 12 include the language "to provide a gas scrubber canister having a lower profile on a diver's body"; however, it is unclear what the lower profile is being compared against. Appropriate corrections have been entered.

Claim Rejections Under 35 U.S.C. § 103(a)

Claims 1-16 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 3,556,098, issued to Kanwisher (hereinafter "Kanwisher"). Applicant respectfully disagrees.

To establish a *prima facie* case of obviousness, the cited prior art references must teach or suggest all of the claim elements. In addition, there must some apparent reason, either in the references or in the knowledge of one skilled in the art, to modify the references or to combine the elements of multiple references with a reasonable expectation of success.

Claims 1, 5, and 12 are generally directed to radial-type rebreather apparatuses. Each apparatus includes a scrubber canister having a cross sectional shape through a plane that is perpendicular to the longitudinal axis of the canister selected from the group of shapes consisting of an oval and an ellipse and a generally hollow interior tube located in the approximate center of the canister, the tube having the same cross sectional shape through a plane that is perpendicular to the longitudinal axis of the tube as the gas scrubber canister and being configured to allow gases to pass through the walls of the tube.

Kanwisher is generally directed to a co-axial-type rebreather apparatus having a round-shaped canister. Referring to FIGURE 2 of Kanwisher, air flows from the user's mouthpiece 20 and downward through an inner conduit, where it enters chamber 38 and passes through the perforated divider plate 39 and back up through the axial-type carbon dioxide absorbing canister 14 containing adsorbent material 16. Because Kanwisher is an axial-type rebreather apparatus, Claim 1 and the claims depending therefrom are not obvious in view of the Kanwisher reference.

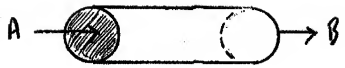
For at least this reason, applicants submit that Claims 1, 5, and 12 and the claims depending therefrom are not obvious in view of Kanwisher. Accordingly, applicant respectfully requests withdrawal of these claim rejections.

Discussion of Work of Breathing in Axial- and Radial-Type Scrubber Designs

To expedite the allowance of the application, applicant provides a brief discussion of axial- and radial-type scrubber systems and the work of breathing calculations associated with different scrubber systems.

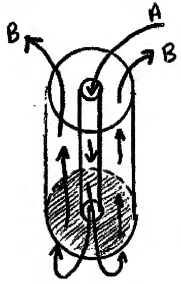
"Work of breathing" (WOB) relates to the amount of effort required by the user's diaphragm to move breathing gases in and out of the lungs. WOB is affected by many components in a rebreather including hose diameters, valves, scrubber design, counter-lung placement and design, etc. WOB is also affected by water depth. As depth increases, breathing gases become more dense and therefore increase WOB. See "Glossary of Rebreather, Dive Physiology, and Technical Diving Terms," available at http://www.nwdesigns.com/rebreathers/glossary.htm (last revised September 7, 2005) (hereinafter "Glossary of Rebreather Terms"). In particular, WOB is affected by the inlet and outlet surface area in the rebreather scrubber (i.e., a larger inlet surface area results in decreased WOB and a larger outlet to inlet surface area ratio results in decreased WOB) and the length of the rebreather scrubber (i.e., a shorter scrubber results in decreased WOB).

An axial-type scrubber is a scrubber design in which the breathing gases move from top to bottom (or vice versa) through the scrubber. A common example is a U.S. Navy fully-closed rebreather, called the MK16. An example of a simple axial-type scrubber would be to start with a coffee can with a removable top. Punch holes in the top and bottom ends of the coffee can and fill the middle with soda lime. Seal the entire unit into the breathing loop. In this example the gases must travel from one end of the can to the other end. See Glossary of Rebreather Terms. An axial-type scrubber has a WOB that can be correlated to its inlet surface area (see shaded area in figure below), in this case the top end of the coffee can.



Round Axial

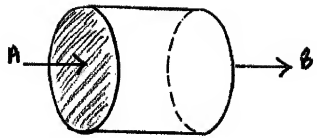
An example of a simple co-axial-type scrubber is described in the Kanwisher reference, mentioned above. A co-axial-type scrubber has a WOB that can be correlated to its inlet surface area (see shaded area in figure below).



Co-Axial

An axial-type rebreather having an oval-shaped canister is also known in the art. See, for example, U.S. Patent No. 3,403,981, issued to Lemcke et al. (hereinafter "Lemcke"), at Column 1, line 69. The oval-shape of the canister allows the canister to better conform to the body of the diver to provide a lower diver profile. The oval-shaped canister in an axial-type rebreather has a WOB that can be correlated to its inlet surface area (see shaded area in figure below), in this case an oval end of the canister.

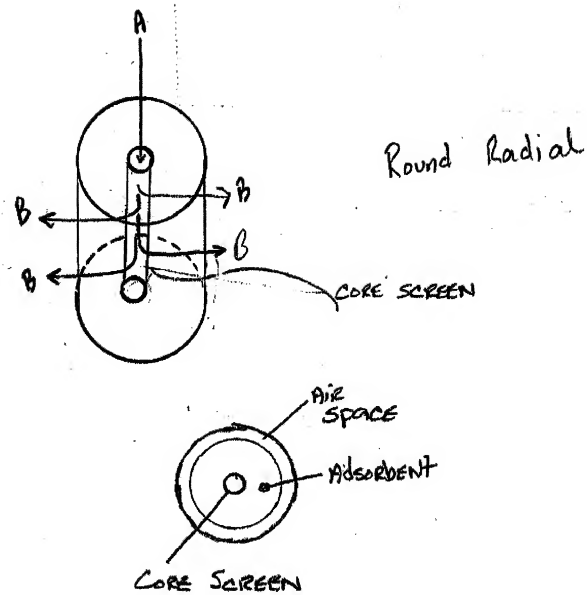
LAW OFFICES OF
CHRISTENSEN O'CONNOR JOHNSON KINDNESS PLLC
1420 Fifth Avenue
Suite 2800
Seattle, Washington 98101
206.682.8100



Dual Axial

A radial-type scrubber is a scrubber design in which the breathing gases move from the middle to the outside (or vice versa) through the scrubber. A common example is a current military rebreather built by Sherwood and Fullerton in Canada. An example of a simple radial-type scrubber would be to start with a coffee can, then insert a tube into the middle of the coffee can from the top. Punch holes in the inner tube and the outside of the coffee can. The top and bottom of the can should be sealed (with the exception of one end of the inner tube). Now the breathing gases move "radially" from the inner tube to the outside of the canister. See Glossary of Rebreather Terms. The radial-type scrubber has a WOB that can be correlated to its inlet surface area, in this case the surface area of the inner tube (see "core screen" in figure below).

LAW OFFICES OF
CHRISTENSEN O'CONNOR JOHNSON KINDNESS PLLC
1420 Fifth Avenue
Suite 2800
Seattle, Washington 98101
206.682.8100

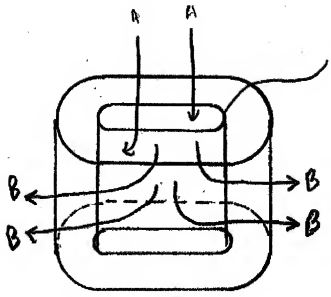


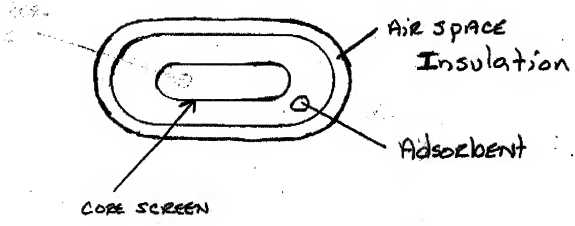
The claims at issue are not obvious in view of a prior art scrubbers, for example, a radial-type scrubber having a round-shaped canister in view of an axial-type scrubber having an oval-shaped canister (e.g., Lemcke). In that regard, Lemcke, and other radial-type scrubbers having round-shaped canisters fail to teach or suggest a gas scrubber canister having a cross sectional shape through a plane that is perpendicular to the longitudinal axis of the canister selected from the group of shapes consisting of an oval and an ellipse and a generally hollow interior tube

located in the approximate center of the canister, the tube having the same cross sectional shape through a plane that is perpendicular to the longitudinal axis of the tube as the gas scrubber canister and being configured to allow gases to pass through the walls of the tube, as generally recited in Claims 1, 5, and 12.

One advantage of an oval or elliptical radial-type canister having an interior tube with the same cross-sectional shape includes a substantial increase in inlet surface area for a substantial decrease in WOB compared to a round radial-type canister (see core screen in figure below). In that regard, an oval radial-type canister having an interior tube with center axes that are 1 inch in width by 4 inches in length will have an increase in inlet surface area of 2-3 times that of a round radial-type canister having an interior tube with a 1-inch diameter (compare core screen of round radial-type canister above and core screen of oval radial-type canister below).

Another advantage of an oval or elliptical-shaped canister is an increase in air space insulation in surrounding relationship with the adsorbent material per pound of adsorbent material. In that regard, adsorbent material for adsorbing carbon dioxide generally operates more efficiently when maintained at higher temperatures. Because water at depth tends to be extremely cold, an increase in air space insulation per pound of adsorbent material provides for a more efficient scrubbing system.





Moreover, a modification of a radial-type scrubber having a round-shaped canister with Lemcke (oval axial-type) would merely result in an oval-shaped canister with a round-shaped interior tube, and not an oval-shaped interior tube. In that regard, oval-shaped interior tubes were not expected to perform due to expected uneven breathing patterns through the adsorbent material surrounding an interior tube that is not round in shape.

LAW OFFICES OF
CHRISTENSEN O'CONNOR JOHNSON KINDNESS PLLC
1420 Fifth Avenue
Suite 2800
Seattle, Washington 98101
206.682.8100

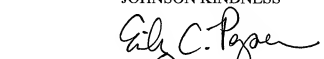
For at least this reason, applicant submits that Claims 1, 5, and 12 and the claims depending therefrom are not obvious in view of Lemcke and a round radial-type scrubber. Accordingly, applicant respectfully requests withdrawal of these claim rejections.

CONCLUSION

In view of the foregoing amendments and remarks, applicant respectfully submits that the present application is in condition for allowance. The Examiner is invited to contact the undersigned representative with any remaining questions or concerns.

Respectfully submitted,

CHRISTENSEN O'CONNOR
JOHNSON KINDNESS^{PLLC}



Emily C. Peyser
Registration No. 59,844
Direct Dial No. 206.695.1634

ECP:mgp